Running head: ROCHESTER FIRE DEPARTMENT POST INCIDENT ANALYSIS

Post Incident Analysis for the Rochester Fire Department

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CERTIFICATION STATEMENT

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

Signed: _____

ABSTRACT

The problem was that the Rochester Fire Department had no type of Post Incident Analysis program or procedure to evaluate the effectiveness of its operations at emergency incidents. The purpose of this research was to develop a procedure for the Rochester Fire Department to use for Post Incident Analysis. Action research methodology was used to accomplish this purpose by answering the following research questions:

1. When should a Post Incident Analysis be conducted?
2. What information should be collected in a Post Incident Analysis?
3. Who should collect and compile these elements?
4. How should the information be used once it is obtained?

A literature review, comprehensive in depth and scope including recognized fire service textbooks, journals, magazines, standards and reports was conducted. Online Learning Resource Center and Internet research was used to obtain examples of Post Incident Analysis programs as well as completed post incident analysis for review. A broad cross section of the fire service, both logistically and operationally was reviewed for comprehensiveness. This cross section spanned from large career urban and suburban departments to small city career departments and combination departments in small towns.

A Post Incident Analysis should be conducted not just when something goes wrong, but after every working incident. An effective Post Incident Analysis should be consistent, timely, put together well and attended by all personnel key to the incident. Post Incident Analysis must be based on established procedures; focus on lessons learned and distributed throughout the

department to all members. There must be no correlation between the Post Incident Analysis and the disciplinary processes.

The research has proven that every department could benefit from a comprehensive Post Incident Analysis process. The researcher recommended the Rochester Fire Department adopt a Post Incident Analysis program.

Table of Contents

Page

Post Incident Analysis for the Rochester Fire Department

Introduction

The problem is that the Rochester Fire Department (RFD) has no type of Post Incident Analysis program or procedure to evaluate the effectiveness of its operations at emergency incidents. The purpose of this research is to develop a procedure for the Rochester Fire Department to use for post incident analysis. Action research methodology shall be used to answer the following research questions:

1. When should a Post Incident Analysis be conducted?
2. What information should be collected in a Post Incident Analysis?
3. Who should collect and compile these elements?
4. How should the information be used once it is obtained?

The questions will be answered by a review of relative literature and by analyzing Post Incident Analysis procedures used by other departments.

Background and Significance

The City of Rochester, New York is the third largest city in New York State, covering 37.1 square miles with a population of 219,773. (United States Census Bureau, 2000) The Rochester Fire Department (RFD) has 521 uniformed employees. There are eighteen companies housed in fifteen fire stations, with at least 94 personnel on duty at all times. The RFD responds to over 32,000 requests for service annually, of which just over 800 are for structure fires.

The RFD does not have a formal Post Incident Analysis (PIA) program in place and there is nothing written in the current RFD Standard Operating Guidelines (SOG) that addresses the elements outlined in the previously stated research questions.

The Incident Commander (IC) which is usually a Line Deputy Chief or Battalion Chief working the incident usually decides as to whether a PIA is conducted. Occasionally, the Fire Chief or Executive Deputy Chief will mandate a PIA be conducted. Consequently, the few PIA sessions that are held are usually because someone is unhappy with how the incident was handled at some level. The RFD has no standardized format for conducting a PIA and does not train its personnel in how to effectively manage a PIA. The few PIA sessions held have been poorly organized and have not been effective. The perception of most of the RFD firefighters is that the only time a PIA is conducted is when someone makes a major mistake at an incident. This has led to firefighters participating in the PIA being defensive about their actions at the incident.

During 2008, several attempts have been made to organize the information garnered at a PIA into a “lessons learned” format to share with all department members. These efforts were loosely organized with no particular format or procedure followed from one session to another. Subsequently, the “lessons learned” information, instead of being generalized training information, was focused specifically upon the actions of a few individuals.

Due to the infrequency of the PIA’s, the lack of any specifically identified trigger mechanisms, and the “lessons learned” being focused upon individual actions, the few PIA’s conducted in 2008 were widely considered “witch hunts” by the rank and file of the department.

The RFD, through its storied history had a precursor of a PIA then called a “Second Alarm Report”. As the title indicates, this report was only done when an incident went to a second

alarm. Not unlike today, the “second alarm report” was seen by the firefighters not as a tool, but as a weapon used to unduly criticize their actions. The effectiveness of this report was hampered by the ingenuity of firefighters desire to avoid the wrath of the totalitarian leadership prevalent in the era. This was avoided by not calling second alarms, but instead calling apparatus one piece at a time. This resulted in having sometimes the equivalent of a third alarm compliment of equipment working at a one alarm fire.

This researcher feels that the value of performing PIAs is well established and documented in the fire service community. This research will explore the requirements for conducting PIAs and what criteria should be included in the PIA process for the RFD. The results will help determine what kind of PIA process will be adopted by RFD. The incorporation of PIAs into the RFD SOG’s will have a significant impact on future suppression operations and firefighter safety.

The goal of a PIA should be to improve the performance of an organization. Without a formal PIA program in place, the RFD is missing out on a valuable tool for evaluation and education that will improve performance of the personnel and the service to the public. The department personnel will be able to use this tool to understand the most efficient and safest way to perform their jobs.

The United States Fire Administration (USFA) is guided by the following operational objectives:

1. Reduce the loss of life from fire in the age group 14 years old and below.
2. Reduce the loss of life from fire in the age group 65 years old and above.
3. Reduce the loss of life from fire of firefighters.
4. To promote within the communities a comprehensive, multi-hazard risk reduction plan led by the fire service organization.

5. To respond appropriately in a timely manner to emerging issues.

The PIA program produced through this research will addresses the United States Fire Administration operational objectives of reducing the loss of life from fire from those citizens 14 year old and younger and 65 years old and older, as well as firefighters. A functioning PIA program will allow the RFD to respond appropriately in a timely manner to emergent issues by bringing these issues to light and using the "lessons learned" as a foundation to build upon to address these issues.

A PIA program is also related to the Executive Fire Officer Program (EFOP) course *Executive Analysis of Fire Service Operations in Emergency Management (EAFSOEM)*. In the recently completed EAFSOEM course the class held a PIA after each scenario. The information gained from conducting these PIA's built upon the knowledge and experience gained in previous scenarios and allowed the class to improve their performance.

Literature Review

A literature review was conducted to examine different variations of Post Incident Analysis (PIA) programs. The literature discussed the design and implementation of both formal and informal PIA's. Also discussed was the dissemination of gathered information and creation of new policies and/or revisions to existing policies.

Harry Carter (Carter, 2001) suggests that a PIA take place while the hose lines and equipment are still in place and the facts are still clear in everyone's minds. He believes conducting an immediate post-fire review improves individual performance as well as stressing the importance of teamwork and improving working relationships.

Tom Brennan (Brennan, 1996) believes a critique should occur after every working incident. The time to have a critique is right after being released by the Incident Commander and before beginning to take up. The incident is still in the forefront of everyone's mind. The personnel that will contribute the most and receive the greatest benefit from immediate feedback are present to participate. The apparatus and hose lines are still in place. Brennan also believes the greatest benefit of doing an on scene critique is the building is still in front of you and accessible.

Frank Montagna (Montagna, 1996) suggests that a PIA should be held after all incidents, not just when something goes wrong. Holding a PIA at incidents where things went well allows inexperienced firefighters to learn from experienced firefighters. Hopefully, this consistency will counter the perception that a PIA is only held when things go wrong and is only used as a discipline tool.

James Smith (Smith, 2002) explains an informal critique and a formal critique. The informal critique is at the company level and should take place at the incident scene. If logistics and/or weather does not allow for on scene review of the incident, the informal critique should be done at the station as soon as practical. The purpose of the informal critique is to review the individual company actions and address their influence of the overall operation. Smith also believes that a formal critique should be conducted after most major or significant incidents.

Bernard Dyer (Dyer, 1995) states, "The value of a critique or Post Incident Analysis as a learning tool is well established. What's needed is to use this technique, whether formally or informally, on a continuous basis."

The International Society of Fire Service Instructors (International Society of Fire Service Instructors, 1999) refers to two forms of PIA. The first they refer to as a general review, which is

conducted immediately. The second is a formal critique, which should be conducted on significant incidents within 48 hours of the incident. ISFSI believes that the operation of the crews and the overall operation of the department can be improved by the proper use of critiques.

The United States has no mandated national standards by which the performances of fire departments are measured. Specific expectations of performance vary greatly regionally and between urban, suburban and rural departments. Klaene and Sanders (Klaene & Sanders, 2000) point out the National Fire Protection Association (NFPA) standards are not mandatory, but they provide a generally accepted framework for standardization and professionalism of the fire service in the United States.

The NFPA standards were reviewed to determine which standards, if any, related to conducting a PIA. There is no specific standard addressing PIA's; however, NFPA 1500 Standard on Fire Department Occupational Safety and Health Program (NFPA, 2007) makes the most references to PIA's. NFPA 1500 dictates the fire department shall establish requirements and standard operating procedures for a standardized Post Incident Analysis of significant incidents or those that involve serious injury or death to a firefighter. The analysis shall include a basic review of the conditions present, the actions taken, and the effect of the conditions and actions on the safety and health of members. The fire department incident safety officer shall be involved in the Post Incident Analysis process to identify any necessary changes or updates to safety and health program elements to improve the welfare of members. The analysis process shall include a standardized action plan for such necessary changes. The action plan shall include the change needed and the responsibilities dates, and details of such actions.

Alan Brunacini (Brunacini, 1991) defined the characteristics of an effective critique. He believed they should be consistent, timely, put together well and attended by all personnel key to the incident. Further the critique should be open, constructive and well facilitated. They must be based on established procedures, focus on lessons learned and distributed throughout the department. A complete system includes standard operating procedures and training before a fire, combined with critiques and revision of policies and procedures after an incident. Brunacini believes in being prepared and that the most important fire we will ever fight is the next one.

ISFSI (1999) recommends several topics that need to be addressed in a critique. They believe the first arriving unit should describe the conditions that were found upon arrival and what actions this company decided to take. The critique should review the size up and situation report given by the first arriving unit, assess the actions of the subsequent arriving units and identify who was in command.

Michael Rowley (Rowley, 1993) adds the reduction in actual working fires combined with the retirement of veteran firefighters causes a loss of experience in the department. The use of a PIA can be used as a mentoring tool to assure this hard gained experience is not lost but is passed onto the next generation of firefighters.

Carter (2001) surmises that through critiques, firefighters will come to understand that the sum of their individual actions determine the outcome of an incident. They will discover that these outcomes can be good or they can be bad. They will come to understand that they can affect incident outcomes by changing what is put into the incident. Training, and subsequently operations on incidents will improve if the lessons learned are applied to future actions.

Kramer and Bahme (Kramer & Bahme, 1992) states that after every formal Post Incident Analysis a written report should be prepared and distributed. Regardless of the post incident analysis method used, there must be a commitment to follow through with the recommendations. All recommendations must be addressed, with a status report on changes or reasons for not adopting the changes forwarded throughout the department.

According to *Firefighting Strategy and Tactics*, in the past firefighters gained experience based on operations at actual working fires. However, with the reduction of actual working fires, firefighters are having fewer opportunities to develop their skills through real world experience and must rely more heavily upon training to gain experience. The use of a PIA allows departments to train firefighters through the experience of others and helps develop these firefighting skills. (Angle, Gala, Harlow, Lombardo, & Maciuba, 2001)

When preparing a post-incident review report, Michael Morgan (Morgan, 1994) advises that it should include recommendations for program enhancement or other modifications. He also states that if policies and procedures did not address key issues that came up during the incident, policies and procedures would have to be developed.

In summary, the consensus of the sources researched is that a PIA program can be a valuable learning and training tool for fire departments, if used properly. These programs can help improve strategy, tactics and safety at emergency incidents and should be utilized more frequently.

The literature unanimously agrees that a PIA should not be held only for incidents where things went wrong, but for other incidents including incidents that ran flawlessly. An established format will assure consistency of application. Specific trigger mechanisms should be written into any

policy or procedure for PIA's. These trigger mechanisms will dictate the types of incidents analyzed and take the subjectivity of only critiquing incidents where things went bad out of the equation. Care must be taken to assure the process remains objective and not a tool for substantiating any disciplinary process.

PROCEDURES

The action research method was used to provide the necessary information to answer the research questions and subsequently develop a Post Incident Analysis (PIA) program for the Rochester Fire Department (RFD): When should a Post Incident Analysis be conducted? What type of information should be collected in a Post Incident Analysis? Who should collect and compile these elements? How should the information be used once it is obtained?

To properly understand the scope and complexity of an effective PIA program, a literature review was conducted. The literature review was comprehensive in depth and scope including recognized fire service textbooks, journals, magazines and reports. Applicable standards from the National Fire Protection Association were also researched to understand the generally accepted framework for standardization and expectations of performance regarding PIA's.

The second phase of the action research involved the review of PIA programs from other departments that utilize them on a regular basis. Online Internet research and online Learning Resource Center (LRC) research was used to obtain examples of Post Incident Analysis programs as well as completed post incident analysis for review. A broad cross section of the fire service, both logistically and operationally was reviewed for comprehensiveness. This cross section spanned from large career urban and suburban departments to small city career departments and combination departments in small towns.

The following departments PIA programs were reviewed for this study:

- Miami-Dade Fire and Rescue Department (Florida)
- Phoenix Fire Department (Arizona)
- Columbia Fire Department (South Carolina)
- Lubbock Fire Department (Texas)
- Sedgwick County Fire Department (Kansas)
- Evesham Fire-Rescue (New Jersey)

Specifically, the following components were analyzed from the selected PIA programs:

1. When do these departments conduct a Post Incident Analysis?
2. What information is collected for a Post Incident Analysis?
3. Who collects and compile these elements?
4. How the information is be used once it is obtained?

Both the literature review and review of current PIA programs were focused on answering the research questions. Sufficiently answering these questions will accomplish the purpose statement and solve the stated problem which is the RFD has no type of PIA program to evaluate the effectiveness of its operations at emergency incidents.

Using the above delineated procedures, other researchers can readily replicate this study and apply it to their own agency. There are several noted limitations to this research. The time constraints for completing an applied research project for the Executive Fire Officer Program preclude reviewing all of the literature written regarding PIA's.

There are literally thousands of departments that have PIA programs and gaining access to and reviewing them all would be impossible. Accepting that fact and considering those who may wish to replicate this research or even utilize this research for their own PIA program, this researcher chose a cross section of departments whose PIA programs were readily accessible online.

The last limitation that should be noted is the individuality of PIA programs. This objective of this research is to develop a PIA for the Rochester Fire Department, an IAFC Metro sized department that serves a densely populated urban and industrial area. Future researchers should consider the idiosyncrasies of their region and department when developing or modifying their own PIA.

Definition of Terms

Formal PIA - involves those on the scene of the incident as well as staff or administrative personnel from the involved departments and includes written documentation of the event.

Hot Wash – is a meeting of all involved personnel on scene to provide an informal briefing of the events of the incident, actions taken and problems encountered.

Informal PIA - involves those working the incident and should take place at the incident scene.

Rapid Intervention Crew (RIC) - is a team of two or more firefighters dedicated solely to search and rescue of other firefighters in distress. RIC shall have no other operational assignment during an incident.

RFD Executive Staff – consists of the Fire Chief, Executive Deputy Chief and the departments seven Deputy Chiefs.

Working Incident – a fire that requires the use of SCBA and at least one attack line to bring under control.

RESULTS

Through action research, a thorough review of written sources as well as review of existing Post Incident Analysis (PIA) provided this author sufficient information to establish comprehensive answers to the research questions.

Research Question 1 - When should a Post Incident Analysis be conducted? A Post Incident Analysis (PIA) should be conducted not just when something goes wrong, but after every working incident. (Montagna, 1996) (Brennan, 1996) A PIA should take place while the hose lines and equipment are still in place, the building is still in front of you and accessible, and the facts are still clear in everyone's minds. (Brennan, 1996) (Carter, 2001) If logistics and/or weather does not allow for on scene review of the incident, the informal critique should be done at the station as soon as practical (Smith, 2002). Whether used formally or informally, the key is to use PIA's on a continuous basis. (Dyer, 1995)

Five of the six PIA programs reviewed had multiple levels of critiques listed with varying timelines for completion. The description and content of the levels are more appropriately discussed under subsequent research questions. In concordance with the information gained from the literature review, each departments existing procedure addresses a component of the PIA that should be conducted once the incident is under control and before units leave the incident scene.

Sedgwick County Fire Department (Matthew, 2001) has only one level of PIA and lists no timeline for completion. Evesham Fire-Rescue (Ward, 2003) conducts both informal and formal PIA's, but lists no timeline for completion. Lubbock Fire Department (Treadwell, 2002) conducts both informal and formal PIA's. The timeline for the informal is 24 hours and 72 hours for the formal. Columbia (Columbia Fire Department, 2006) conducts both informal and formal

PIA's and they shall be completed within 14 days of the incident. Phoenix Fire Department (Phoenix Fire Department, 2002) has five levels of critique identified and requires them to be completed in ten days. Miami-Dade Fire Rescue (Castillo, 2001) conducts both informal and formal PIA's and allows 30 days for their completion.

The consensus of the research reveals that a PIA should be conducted after every working or otherwise significant incident. Sedgwick County Fire Department (Matthew, 2001) starts the PIA process at the discretion of any chief officer. The remainder of established PIA programs reviewed utilized one or more of the following as a trigger mechanism to start the PIA process:

- Any incident that an unusual event occurs such as an explosion, collapse, etc.
- A building fire in which three or more rooms are severely damaged by fire, or where unusual extinguishing problems existed
- Any fire resulting in a fatality
- Any fire resulting in injury to firefighters serious enough to necessitate admission to a medical facility
- Any close call incident where firefighter could have been seriously injured
- Any significant hazardous materials incident
- Any mass casualty incident involving four or more seriously injured patients
- At the Incident Commander's discretion, or at the direction of a senior officer
- Large scale wildland fires involving three or more units
- Specialty rescue operations
- Special events that require department involvement such as festivals, parades, etc.
- Mock incident participation

- Any emergency preparedness incident whether natural or man-made
- Events that tax the department's ability such as weather incidents, multiple fires, etc.

A component of the PIA should begin as soon as the incident is under control and before units leave the scene. There are varying timelines for completion from as soon as 24 hours to 30 days after the incident concludes. A timeline for completion of the PIA process is not addressed by the Sedgwick County Fire Department (Matthew, 2001) or the Evesham Fire-Rescue (Ward, 2003).

Research Question 2 - What information should be collected in a Post Incident Analysis?

An effective critique should be consistent, timely, put together well and attended by all personnel key to the incident. Further, the critique should be open, constructive and well facilitated. They must be based on established procedures and focus on lessons learned. (Brunacini, 1991)

The first arriving unit should describe the conditions that were found upon arrival and what actions this company decided to take. The critique should review the size up and situation report given by the first arriving unit, assess the actions of the subsequent arriving units and identify who was in command. (International Society of Fire Service Instructors, 1999)

Miami-Dade Fire Rescue (Castillo, 2001) and Evesham Fire-Rescue (Ward, 2003) PIA policies provide a list of general subject areas to be addressed and facts the PIA will provide. Lubbock Fire Department (Treadwell, 2002) and Sedgwick County Fire Department (Matthew, 2001) policies provide a Post Incident Analysis Worksheet with detailed list of 12 subject areas. Each subject area lists between two and twenty questions relating to that subject. These worksheets are designed as "yes or no" style checklists with no mechanism for expounding on the questions.

Columbia Fire Department (Columbia Fire Department, 2006) PIA procedure lists 13 subject areas. Each subject area lists between two and seventeen questions relating to that subject. These

worksheets are designed as a “fill in the blank” style, directing those filling them out to use additional paper to expound, if necessary.

The Phoenix Fire Department PIA procedure (Phoenix Fire Department, 2002) has a questionnaire filled out online by each company and chief officer involved with the incident. The person assigned the task of formulating the critique then uses a critique worksheet to compile the feedback from the companies involved into a Post Incident Analysis presentation.

The six existing PIA procedures reviewed differed in format, but all looked for the same basic information with some being more detailed than others. The following is a consensus compilation of the type of information the research has determined should be present in a PIA:

Introduction

- A general overview of the incident including a diagram of the building, exposures, water supply, time of day, weather conditions, etc.
- Indicate unique circumstances/problems, etc.

Building Structure/Site Layout

- Review type of structure.
- What construction or design features contributed to or prevented fire spread?
- Did the topography and/or type of fuel affect fire control efforts?
- Did fire alarm and/or suppression devices work properly?
- Did personnel or apparatus encounter any problems in gaining access?
- What is needed to correct these problems?

Fire Code History

- Review relevant Fire Code requirements and history.

Communications

- Did dispatcher provide all information available at the time of dispatch?
- Was the incident adequate? What channels were used? Problems?
- Were proper communications procedures followed?
- Were there problems communicating with other agencies?
- Did units, divisions and groups communicate effectively?
- Was radio discipline effective?
- Did Incident Commander provide timely updates to Communications?

Pre-Plans

- Were pre-plans available and should they be updated?

Incident Operations

- What was the structural integrity of the building on arrival, at 10, 20, 30 minutes etc.
- Was Command identified and maintained throughout the incident?
- Was a Command Post established and its position readily identified?
- Size-up decisions made by Command?
- Was additional apparatus requested in a timely manner?
- Strategy and/or Incident Action Plan?
- Did personnel, units, and teams execute tactics effectively?
- Were any training needs identified? Provide examples.
- Were Standard Operating Procedures used? Were they adequate? Do they need to be updated? If not used, why?
- What offensive/defensive decisions were made by Command?
- How was risk analysis applied to the incident?

- Were the divisions/groups used appropriate to the incident's type and complexity?
- Was apparatus properly positioned? If not, why?
- Attack line selection and positioning?
- Ventilation operations?
- Salvage operations?
- Night time and interior lighting operations?
- Were Mutual Aid companies effective in operation? (if used)
- Was water supply adequate? Specify water source and hydrant locations.
- Was Rapid Intervention Crew in place and ready for deployment?
- Second means of egress established and communicated?

Staging

- Was Staging properly located?

Support Functions

- Was a Rehab group established?
- Were fire/rescue personnel provided with food and drinks?
- Was adequate shelter provided for fire/rescue personnel?
- Were crews relieved by fresh crews regularly and frequently?
- Were there any equipment or apparatus failures?
    - Did these failures have a detrimental effect on the incident outcome?
- Were functions with outside agencies properly coordinated?

Safety Group

- Was a RIC team established? If not, why?
- Was any fire/rescue personnel injured? Why?

- Were all safety SOPs and regulations enforced?
- Was an Incident Safety Officer assigned? If not, why?
- Was EMS onscene and properly setup?

Accountability

- Were actions taken to ensure accurate personnel accountability?
- Was the status of units, divisions, groups and support personnel maintained?
- Did personnel provide adequate feedback?
- Was the incident continuously controlled and monitored?

Investigations

- Was the fire's origin and cause determined?
- What factors contributed to the spread of the fire?

Lessons Learned

- Were specific training needs identified?
- Recommended improvements?
- Was a hot wash performed on site?

Research Question 3 - Who should collect and compile these elements? National Fire Protection Association (NFPA) 1500 dictates the fire department shall establish requirements and standard operating procedures for a standardized Post Incident Analysis of significant incidents or those that involve serious injury or death to a firefighter. The fire department incident safety officer shall be involved in the Post Incident Analysis process to identify any necessary changes or updates to safety and health program elements to improve the welfare of members. (NFPA, 2007)

Columbia Fire Department (Columbia Fire Department, 2006) procedure directs the Incident Commander or incident command team to analyze every incident informally to improve personnel, unit, and system performance. After every major incident or special event, the Incident Commander must develop a post incident analysis to determine strengths, weaknesses, and lessons learned about the incident operations.

Evesham Fire-Rescue (Ward, 2003) policy suggests that each person should conduct a "self critique" after each incident to evaluate their own performance. The Incident Commander is charged with the task of conducting informal and formal PIA's of incidents.

Lubbock Fire Department (Treadwell, 2002) and the Miami-Dade Fire Rescue (Castillo, 2001) tasks the Company Officer with the task of facilitating an informal PIA. Formal PIA's are facilitated by the Incident Commander. Lubbock Fire Department (Treadwell, 2002) also has a semi-formal PIA which is facilitated by the Incident Commander.

Sedgwick County Fire Department (Matthew, 2001) guidelines indicate that any Chief Officer can initiate a request for a PIA, either on their own accord or by a substantiated request of a subordinate. Once the PIA is initiated the Safety / Training Division takes control of the process and provides a person not involved in the incident as a facilitator. A scribe is also provided to document items discussed and lessons learned.

The Phoenix Fire Department (Phoenix Fire Department, 2002) PIA procedure contains five levels of critique. The size and complexity of the incident determine the type of critique used and the type of critique determines who serves as the facilitator. The levels of critique and the person responsible for facilitating it are described as follows:

Individual - Initiated and conducted by the company officer within the individual company, but may include other companies if deemed necessary. No documentation of the critique required.

Company Level - Post-incident critique conducted on site, prior to departing the scene. This critique is informal, brief and is initiated by the Incident Commander or Battalion Chief.

Battalion Level - Initiated and organized by the Battalion Chief. This is a structured critique format. The necessary companies are scheduled and assembled as soon as feasible after the conclusion of the incident.

Operations Level - Conducted within the battalion by the Battalion Chief or Shift Commander. This may be a first alarm or multiple-alarm incident, or other significant incident whose site operations were uncomplicated, and generally did not involve a large response of fire department resource or outside agencies.

Department Level - Utilized for critiquing large-scale or complex incidents that involved a large response of fire department resources and several outside agencies or incidents that were unusual or tactically significant occurrences. A chief officer will be selected to prepare and conduct the critique. A team may also be assigned to assist. Tactical Services Section will be responsible for coordinating the date and location of department level critiques.

Research Question 4 - How should the information be used once it is obtained? Critiques must be based on established procedures, focus on lessons learned, and distributed throughout the department. A complete system includes standard operating procedures and training before a fire, combined with critiques and revision of policies and procedures after an incident. (Brunacini, 1991)

The use of a PIA should be used as a mentoring tool to assure hard gained experience is not lost but is passed onto the next generation of firefighters. (Rowley, 1993) Training, and subsequently operations on incidents will improve if the lessons learned are applied to future actions. (Carter, 2001) Regardless of the post incident analysis method used, there must be a commitment to

follow through with the recommendations. All recommendations must be addressed, with a status report on changes or reasons for not adopting the changes forwarded throughout the department. (Kramer & Bahme, 1992)

NFPA 1500 dictates the fire department incident safety officer shall be involved in the Post Incident Analysis process to identify any necessary changes or updates to safety and health program elements to improve the welfare of members. The analysis process shall include a standardized action plan for such necessary changes. The action plan shall include the change needed and the responsibilities dates, and details of such actions. (NFPA, 2007)

The Columbia Fire Department uses the Post Incident Analysis as a tool for Incident Commanders and Command Staff to identify areas of strengths, deficiencies and needed areas of improvement. The PIA may also be used to identify other needs such as equipment needs, staffing deficiencies and areas of training. The information collected may be used for justifying funding in future budget requests. The Columbia Fire Department uses the PIA in conjunction with the onsite incident “Hot Wash” to identify effectiveness of operations of the overall incident, starting from the initial call to the closure of the incident fire report. (Columbia Fire Department, 2006)

The Phoenix Fire Department (Phoenix Fire Department, 2002) presents a critique review to all company officers on a regular basis throughout the year. The objective of the critique review is to provide the follow-up training of lessons learned to all company and Command officers of the department. The Tactical Services Section will prepare the Critique Review Training Packet. The training packet will include all necessary materials to emphasize the lessons learned. The

Tactical Services Chief, or his designee, will conduct the critique review at quarterly company officer meeting.

Miami-Dade Fire Rescue (Castillo, 2001), Lubbock Fire Department (Treadwell, 2002), and Sedgwick County Fire Department (Matthew, 2001) PIA procedures direct the facilitator of the PIA to prepare a written report of the findings and make it available to all stations and personnel. There is no mention of any type of follow-up training or other uses of the material.

After the Evesham Fire-Rescue (Ward, 2003) conducts a PIA, a final written report is developed and made available to each station and emailed to each member. Mutual aid companies and outside agencies are also offered a copy of the report. PIA's are reviewed annually to reinforce the lessons learned. The elements of the PIA are compared to the current procedures. If the lessons learned support procedural changes, recommendations for these changes are forwarded through the chain of command for appropriate approval and implementation.

DISCUSSION

The goal of this applied research project is that the Rochester Fire Department will have a standardized Post Incident Analysis process adopted into its procedures. The research conducted has outlined many benefits to conducting a Post Incident Analysis. All the authors in the literature review strongly support the use of the PIA. The author agrees with the research from the literature review that a PIA of some type should occur on all working incidents.

The research has shown that a post-incident review process clearly provides an opportunity to learn from incidents. Applying lessons learned allows the department to bring attention to procedures and policies and uses the incident as a means of improving operations to better prepare for future situations. (Morgan, 1994) One of the most important results of always

conducting this critique is that each member begins to understand the entire operation and his or her part in it. (Carter, 2001) A PIA allows firefighters to obtain a more global perspective of all the operations at an incident, rather than just the part they played in bringing the incident under control. (Smith, 2002)

The RFD currently does not have any policy or procedure requiring a PIA be conducted and has no standardized format to guide the PIA's that are conducted. For a PIA to be effective, it is important that a standardized process or procedure be implemented to ensure the process is consistent throughout the department. (Montagna, 1996) If the same basic questions are not asked at every PIA it will be difficult to detect trends and deficiencies at emergency operations. (Smith, 2002) While the system needs to be a written procedure so it can be performed in a standard fashion each time it is used, it should be fluid enough that items of interest or concern can be added. (Carter, 2001)

Another important aspect of a successful PIA program is that the results be documented and distributed throughout the organization. (Kramer & Bahme, 1992) To be effective, focus must be on actions taken and lessons learned and not on disciplinary issues. (Montagna, 1996) The PIA should be conducted on a regular, consistent, and timely basis. (Brunacini, 1991) One of the most important benefits of PIA is to develop lessons learned and incorporate them into the department's operating procedures and training lesson plans. (Brunacini, 1991)

Six existing PIA procedures from diversely different departments were reviewed. All six of the departments created a written record of the findings of the PIA and distributed it to their members. There are similarities as to how each department uses the information once obtained; however, two departments utilize the PIA more extensively than the others:

- Sedgwick County Fire Department (Matthew, 2001) and Miami-Dade Fire Rescue (Castillo, 2001) states the information will be used for future direction in training needs, but do not indicate how this will happen.

- Evesham Fire-Rescue (Ward, 2003) and Lubbock Fire Department (Treadwell, 2002) compares the information contained in the PIA to existing SOP's and considers recommendations for changes in policies and procedures that will improve department operations. Evesham Fire-Rescue (Ward, 2003) reviews the information on an annual basis.

- Columbia Fire Department (Columbia Fire Department, 2006) uses the Post Incident Analysis in conjunction with the onsite incident "Hot Wash" to identify effectiveness of operations of the overall incident. The PIA is also used to identify other needs such as equipment needs, staffing deficiencies and areas of training. The information collected is sometimes used to justify funding in future budgeting request.

- The Phoenix Fire Department (Phoenix Fire Department, 2002) conducts company-level critique reviews with all company officers and command officers on a regular basis throughout the year. The objective of the critique review is to provide follow-up training of lessons learned.

It is the researcher's conclusion that both a formal and informal PIA process, which follows the criteria outlined by the research, is justified. This research revealed that there are many benefits to a properly formulated and well organized PIA process; benefits that will have a positive impact on any department that chooses to incorporate the process into their operation. (Brunacini, 1991) Incorporation of a PIA process into departmental policies and procedures will

provide the basis for standardization and consistency needed to get the desired results. (Kramer & Bahme, 1992)

RFD is currently experiencing the effects from lack of standardization when PIAs are conducted. With the adoption of a well-designed and implemented PIA procedure, RFD will experience improved operations, increased morale, more effective training, and better documentation of lessons learned. (Brunacini, 1991) These benefits will impact the organization now and in the future as the retirement of veteran firefighters causes a loss of experience in the department. The use of a PIA can be used as a mentoring tool to assure this hard gained experience is not lost, but is passed onto the next generation of firefighters. (Rowley, 1993)

The benefits of a properly formulated PIA process can extend beyond incident operations and training. The findings of a PIA can be used to identify equipment needs, staffing deficiencies and justifying funding in future budgets requests. (Columbia Fire Department, 2006)

RECOMMENDATIONS

The researcher recommends the Rochester Fire Department adopt the Post Incident Analysis program located in Appendix A. The PIA must never be used as a disciplinary tool. The focus of the program must be on actions taken and lessons learned to be effective.

As with all new policies, The RFD Executive Staff will review and approve the procedure prior to it being distributed to the department. Training of all officers will be conducted prior to the implementation of the PIA program. The purpose of this training is to educate the officers about the objectives of the PIA program and teach them how to be an integral part of the total PIA process. A key teaching point of this training will be for the Company Officers to return to their companies and assure everyone understands the main objective of the process is to improve the

performance of the RFD on emergency incidents; there is no correlation between the PIA program and the disciplinary process. The Battalion Chiefs will become familiar with the PIA process and further the comfort level of their subordinates by conducting a mock PIA after quarterly battalion drills.

As a follow-up evaluation of the effectiveness of the program, a survey will be distributed to each company asking their assessment of the PIA process and requesting their input for improvement. The data from the survey will be compiled and the process revised, as indicated. The results of the survey and any subsequent changes to the policy will be published for all members review. Other members of the RFD currently in the EFO program could consider an Applied Research Project evaluating the effectiveness of the PIA program.

The research has proven that every department could benefit from a comprehensive PIA process. I would recommend the following for any future researchers interested in developing a PIA process for their department:

- Conduct a broad literature review. There is no shortage of authors on the subject of PIA.
- Research other EFO ARP's on the subject. Learn from others research and adopt the proper research methodology to guide you towards the most productive outcome.
- Don't be afraid to leave your comfort zone. It is tempting to only look at departments similar to yours, but this researcher found there is much to learn from researching the programs of both large and small departments.
- Consider researching ways to broaden the uses of PIA beyond the operational incident and training realms. The data compiled from PIA's may prove valuable in other areas as well.

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APPENDIX A

ROCHESTER FIRE DEPARTMENT POST INCIDENT ANALYSIS

PURPOSE:

To establish a uniformed post incident analysis process to be used as a tool for identifying strengths and weakness within the department and identify changes in policies and procedures to address needed areas of improvement.

SCOPE:

These guidelines apply to all members of the Rochester Fire Department.

PROCEDURE:

The Rochester Fire Department (RFD) shall use the Post Incident Analysis (PIA) as a tool for Incident Commanders, Battalion Chiefs, Company Officers and Executive Staff to identify areas of strengths, deficiencies and needed areas of improvement. The PIA may also be used to identify other needs such as equipment needs, staffing deficiencies and areas of training. The information collected may be useful for justify funding in future budgeting requests. The RFD shall use the Post Incident Analysis in conjunction with the onsite incident “Hot Wash” to identify effectiveness of operations of the overall incident, starting from the initial call to the closure of the incident fire report.

POLICY:

I. Responsibilities:

Incident Commanders, Battalion Chiefs, Company Officers and Executive Staff shall share responsibility for the overall effectiveness of this guideline. The PIA is a valuable document for everyone to use and to improve the overall operations of the fire service. The PIA is **not** to be used to assign blame or be a part of any disciplinary process. The PIA will be completed by the

responsible Battalion Chief or Incident Commander with input solicited from the Incident Safety Officer. Forms will be submitted to the Executive Deputy Chief for review, then to the Chief for final review and filing.

A PIA shall be completed within 14 days of the incident. Once reviewed, procedural functions may be evaluated and changed to better serve the department. Everyone's cooperation is encouraged and needed. Anyone involved in an incident may request a particular incident be evaluated. Request for an incident evaluation shall be made through the chain of command and approved by the appropriate Line Deputy Chief.

II. Post Incident Analysis

The Incident Management Team (Incident Commander, Operations Officer and Incident Safety Officer) and involved Company Officers should analyze every incident informally to improve personnel, unit, and system performance. After every major incident or special event, the Incident Commander **must** develop a PIA to determine strengths, weaknesses, and lessons learned about the incident operations.

The post incident analysis should be fact-based, and not include unsubstantiated opinions. The PIA is forwarded to the Fire Chief through the appropriate Chain of Command. A copy of the NIFRS incident report shall accompany the PIA. A PIA must be completed when one or more of these situations exist:

- Any incident that an unusual event occurs such as an explosion, collapse, etc.
- A building fire in which three or more rooms are severely damaged by fire, or where unusual extinguishing problems existed
- Any fire resulting in a fatality

- Any fire resulting in injury to firefighters serious enough to necessitate admission to a medical facility
- Any close call incident where firefighter could have been seriously injured
- Any significant hazardous materials incident
- Any mass casualty incident involving four or more seriously injured patients
- At the Incident Commander's discretion, or at the direction of a senior officer
- Large scale wildland fires involving three or more units
- Specialty Rescue operations.
- Special events that require department involvement such as festivals, parades, etc.
- Mock incident participation
- Any emergency preparedness incident whether natural or man-made
- Events that tax the department's ability such as weather incidents, multiple fires, etc.

The PIA is a critical component in determining the processes used during a major incident and an educational tool for all RFD personnel. Valuable lessons are learned from observations of effective and efficient methods of mitigating a major incident. These include all strategic decisions, operational issues, built-in fire protection devices, and anything else that assisted in mitigating the incident. RFD personnel also benefit from learning what has **not** proven to be effective or efficient.

The PIA requires the Incident Commander to closely evaluate all conditions, factors, and decisions made during a major incident. This detailed retrospective provides documentation that can be used as an educational tool. Each Incident Commander should use all available resources to completely and thoroughly describe the incident and the methods used to mitigate it.

A Hot Wash is a meeting of all involved personnel on scene to provide an informal briefing of the events of the incident, actions taken and problems encountered. An incident “Hot Wash” shall be performed before the release of units as a fact finding tool. The information obtained during the “Hot Wash” will be of value when completing the PIA process.

The following forms are available on every department computer and shall be completed as follows:

- The PIA form shall be completed by the Incident Management Team. For each answer, provide a detailed explanation including procedural examples, if applicable. The more accurate the information contained in the PIA, the greater the benefit for the entire department.
- The Incident Fact Sheet is to be completed by each Company Officer involved in the incident to assist the Incident Commander in completing the PIA.

The completed PIA package may also be used as a presentation format for a critique of any incident. Proper completion of the forms will allow use either by the Incident Commander or an independent facilitator.

APPENDIX B

ROCHESTER FIRE DEPARTMENT POST INCIDENT ANALYSIS

Address

Incident #

Date

I. Introduction

A. Provide a general overview of the incident including an area diagram of the building, exposures, water supply, time of day, weather conditions, etc.

_____

B. Indicate unique circumstances/problems, etc.

_____

II. Building Structure/Site Layout Use separate paper if necessary.

A. Review type of structure

_____

B. What construction or design features contributed to the fire spread, or prevented fire spread, such as sprinklers, fire doors, etc.?

_____

C. Did the topography and/or type of fuel affect fire control efforts?

_____

D. Did fire alarm and/or suppression devices work properly?

_____

E. Did personnel or apparatus encounter any problems in gaining access? If yes, explain.

_____

F. What is needed to correct these problems?

_____

III. Fire Code History

G. Review relevant Fire Code requirements and history.

_____

IV. Communications

A. Did dispatcher provide all information available at the time of dispatch?

_____

B. Was the incident communication adequate? What were the problems?

_____

C. Were proper communications procedures followed?

_____

D. Were there problems communicating with Mutual Aid companies?

_____

E. Was the communication network controlled to reduce confusion?

_____

F. Did units, divisions and groups communicate effectively?

_____

G. Was radio discipline effective? If not, what can be done to improve this in the future?

_____

H. Did Incident Commander provide timely updates to Dispatch?

_____

V. Pre-emergency Planning

A. Were pre-fire or other plans needed on the scene?

_____

1. Were they available? _____

2. Should they be updated? _____

VI. Onscene Operations

A. What was the structural integrity of the building based on fire conditions at the time of arrival; at 10 minutes; 20 minutes; 30 minutes, etc?

_____

B. Was Command identified and maintained throughout the incident?

_____

C. Was a Command Post established and readily identifiable?

_____

D. Size up decisions by command?

_____

E. Was additional apparatus requested in a timely manner?

_____

F. Strategy and/or Incident Action Plan?

_____

G. Did personnel, units, and teams execute tactics effectively?

_____

H. Were any training needs identified? Provide examples.

_____

I. Were Standard Operating Procedures used? Were they adequate? Do they need to be updated? If not used, why?

_____

J. What offensive/defensive decisions were made by command?

_____

K. How was risk analysis applied to the incident?

_____

L. Were the divisions/groups used appropriate to the incident's type and complexity?

_____

M. Was apparatus properly positioned? If not, why?

_____

N. Attack line selection and positioning?

_____

O. Ventilation operations?

_____

P. Salvage operations?

_____

Q. Night time and interior lighting operations?

_____

R. Were Mutual Aid companies effective in operation?

_____

S. Was water supply adequate? Specify Water source, Hydrant Location?

_____

T. Was RIT in place and ready for deployment?

_____

U. Second means of egress established and communicated?

_____

VII. Staging

A. Location adequacy?

_____

B. Site Access?

_____

VIII. Support Functions

A. Was a Rehab group established?

_____

B. Were fire/rescue personnel provided with food and drinks?

_____

C. Was adequate shelter provided for fire/rescue personnel?

_____

D. Were crews relieved by fresh crews regularly and frequently?

_____

E. Were there any equipment or apparatus failures? Did these failures have a detrimental effect on the incident outcome?

_____

F. Were functions with outside agencies properly coordinated? Such as Red Cross, Police, RGE, Building Department, etc.

_____

IX. Safety Group

A. Was a RIC team established? If not, why?

_____

B. Was any fire/rescue personnel injured? Reasons why?

_____

C. Were all safety SOPs and regulations enforced?

_____

D. Was EMS on standby? Setup in a readily deployable, but safe position?

_____

X Accountability

A. Were actions taken to ensure accurate personnel accountability?

_____

B. Was the status of units, Divisions, Groups and support personnel maintained?

_____

C. Did personnel provide adequate feedback?

_____

D. Was the incident continuously controlled and monitored?

_____

XI. Investigations

A. Was the fire's origin and cause determined?

_____

B. What factors contributed to the fire's spread?

_____

XII. Lessons Learned

A. Were specific training needs identified?

_____

_____

_____

B. Recommended improvements:

_____

_____

_____

_____

C. Was a Hot Wash performed on site? If not, why?

_____

XIII. Overall Analysis of Incident

Was the incident good or bad? Give factual examples why with procedural references:

_____

_____

_____

_____

_____

_____

_____

_____

APPENDIX C

ROCHESTER FIRE DEPARTMENT POST INCIDENT ANALYSIS

INCIDENT FACT SHEET

Company and Officer: _____

Incident Address: _____

Time of Arrival: _____

Nature of Incident:

_____

_____

_____

Describe the situation upon arrival; Smoke conditions, involvement, exposures, etc:

_____

_____

_____

_____

Describe Water Supply:

_____

_____

Obstacles Encountered; Provide explanation:

_____

_____

_____

Lessons learned:

_____

_____

_____

Recommendations for improving operations:

_____

_____

_____

Diagram of incident: